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AMENDMENTS TO THE CLAIMS

1. (currently amended) A method, comprising:

obtaining a signal indicative of an image;

forming an original histogram indicative of the signal, said histogram including information indicative of numbers of dynamic range levels in the signal;



forming a mapping function, which relates each dynamic range level to positions of peaks in the original histogram; and

scaling said original histogram based on said mapping function, wherein said mapping function forms a curve which has areas of highest slope near said peaks in said original histogram, wherein said forming a mapping function comprises determining center portions of said peaks, and characterizing dynamic range levels based on their relationship with said center portions of said peaks; and

determining widths of peak areas in said original histogram, and weighting the dynamic range levels based on said widths of said peak areas.

- 2. (canceled)
- 3. (original) A method as in claim 1, wherein there are two of said peaks.
- 4. (canceled)
- 5. (canceled)
- 6. (original) A method as in claim 1, further comprising forming a new histogram based on said scaling, and displaying an image based on said new histogram.

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7. (original) A method as in claim 1, wherein said obtaining an image comprises using an active pixel sensor to obtain an image.

8. (original) A method as in claim 6, wherein said mapping function is monotonous.

9. (currently amended) A method, comprising:

obtaining a signal indicative of an image;

forming an original histogram indicative of the signal, said histogram including information indicative of numbers of dynamic range levels in the signal;

forming a mapping function, which relates each dynamic range level to positions of peaks in the original histogram; and

scaling said original histogram based on said mapping function,

A method as in claim 1, wherein said dynamic range levels are gray scale levels, and said forming a mapping function comprises forming a mapping curve which is based on the equation

$$[[f(g) = \frac{-1 + exp \frac{g - loc1}{wl}}{1 + exp \frac{g - loc1}{wl}} + \frac{-1 + exp \frac{g - loc2}{w2}}{1 + exp \frac{g - loc2}{w2}}]]$$

$$f(g) = \frac{-1 + \exp\frac{g - \log 1}{w1}}{1 + \exp\frac{g - \log 1}{w1}} + \frac{-1 + \exp\frac{g - \log 2}{w2}}{1 + \exp\frac{g - \log 2}{w2}}$$

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, where loc1 and w1 are respectively center points and widths of a first peak, g is a gray level, and loc2 and w2 are respectively center points and widths of a second peak.

10. (currently amended) A method as in claim 9, wherein said scaling comprises scaling the mapping curve according to

$$[[m(g) = (2^{n}-1)x \frac{f(g)-f(\min(g))}{f(\max(g))-f(\min(g))}]]$$



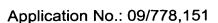
$$m(g) = (2^{n}-1) \times \frac{f(g) - f(\min(g))}{f(\max(g)) - f(\min(g))}$$

where f (g) is the mapping curve, and n is the number of gray grey levels to which the mapping curve is to be scaled.

11. (currently amended) A method, comprising: A method as in claim 1, obtaining a signal indicative of an image;

forming an original histogram indicative of the signal, said histogram including information indicative of numbers of dynamic range levels in the signal;

forming a mapping function, which relates each dynamic range level to positions of peaks in the original histogram; and



scaling said original histogram based on said mapping function, wherein said dynamic range levels are gray scale levels, and said forming a mapping function comprises forming a mapping curve, and wherein said scaling comprises scaling the mapping curve according to

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$$[[m(g) = (2^{n}-1)x \frac{f(g)-f(\min(g))}{f(\max(g))-f(\min(g))}]]$$

$$m(g) = (2^{n}-1) \times \frac{f(g) - f(\min(g))}{f(\max(g)) - f(\min(g))}$$

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, where Where f(g) is the mapping curve, g is an original gray level, and n is the number of dynamic range levels to which the mapping curve is to be scaled.

- 12. (original) A method as in claim 6, wherein said mapping function has a form that preserves relative brightness of a transformed image.
- 13. (original) A method as in claim 12, wherein the new histogram has peaks in proportional locations to those in the original histogram, and a relationship between heights of said peaks of the new histogram is the same as a relationship between heights of peaks in the original histogram.
 - 14. (currently amended) An apparatus, comprising:

an image acquisition element, obtaining an original signal indicative of an image of a scene; and

a processor, modifying said original signal to produce a modified signal, wherein the modified signal has fewer levels of dynamic range than the original signal, said processor operating by calculating an original image histogram, calculating a mapping function for the original image histogram which comprises a monotonous function having changes in said function which occur predominately at areas of peaks in said original image histogram, and forming a new compressed histogram based on said mapping function,

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wherein said mapping function depends on center portions of said peaks and widths of said peaks.

- 15. (original) An apparatus as in claim 14, wherein said image acquisition device includes an active pixel sensor.
- 16. (currently amended) An apparatus as in claim 14, wherein said processor forms a mapping curve which has areas of highest change near said areas of peaks in the <u>original</u> image histogram.
- 17. (original) An apparatus as in claim 16, wherein there are two of said peaks.
- 18. (currently amended) An apparatus as in claim 16, wherein there are n of said peaks and where n is an integer.
 - 19. (canceled)
- 20. (currently amended) An apparatus as in claim [[19]] 14, wherein said processor carries out said mapping function by comparing a current gray level of the original signal with a level at a peak.

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21. (original) An apparatus as in claim 20, wherein said processor forms said mapping function by weighting said function using said widths.

22. (currently amended) An apparatus as in claim 14, further comprising a display device, having the capability of displaying n levels, where n is less than a number of levels in the original signal and where n is an integer.

23. (currently amended) A method, comprising:

obtaining a higher dynamic range signal;

forming a histogram between components of the signal indicative of dynamic range levels in the signal, and numbers of those dynamic range levels;

finding peaks in said histogram; and

transforming said histogram into a modified histogram which keeps a similar specified relationship between said peaks and which represents a lower dynamic range signal, wherein said transforming comprises forming a mapping function based on the original histogram, and using said mapping function to form a modified histogram, and the mapping function depends on center portions of the peaks and widths of the peaks.

- 24. (canceled).
- 25. (new) A method, comprising:

obtaining a signal indicative of an image;

forming an original histogram indicative of the signal, said histogram including information indicative of numbers of dynamic range levels in the signal;

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forming a mapping function, which relates each dynamic range level to positions of peaks in the original histogram;

scaling said original histogram based on said mapping function; and

determining widths of peak areas in said original histogram, and weighting the dynamic range levels based on said widths of said peak areas.